

Virginia
Wildlife

DECEMBER 1971

VOLUME XXXII / NUMBER 12
20 CENTS



JOHN W. TAYLOR

Virginia Wildlife

**Dedicated to the Conservation of
Virginia's Wildlife and Related Natural Resources
and to the Betterment of
Outdoor Recreation in Virginia**

Published by VIRGINIA COMMISSION OF GAME AND INLAND FISHERIES, Richmond, Virginia 23230



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DECEMBER

Volume XXXII/No. 12

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Observations, conclusions and opinions expressed in *Virginia Wildlife* are those of the authors and do not necessarily reflect those of the members or staff of the Commission of Game and Inland Fisheries.

COVER: Ruffed grouse by J. W. Taylor of Edgewater, Maryland.

SUBSCRIPTIONS: One year, \$2.00; three years, \$5.00. Make check or money order payable to Treasurer of Virginia and send to Commission of Game and Inland Fisheries, P. O. Box 11104, Richmond, Virginia 23230.

VIRGINIA WILDLIFE is published monthly at Richmond, Virginia, by the Commission of Game and Inland Fisheries, 4010 W. Broad Street. All magazine subscriptions, change of address notices, and inquiries should be sent to Box 11104, Richmond, Va. 23230. The editorial office gratefully receives for publication news items, articles, photographs, and sketches of good quality which deal with Virginia's soils, water, forests, and wildlife. The Commission assumes no responsibility for unsolicited manuscripts and illustrative material. Credit is given on material published. Permission to reprint text material is granted provided credit is given the Virginia Commission of Game and Inland Fisheries and VIRGINIA WILDLIFE. Clearances must be made with photographers or artists to reproduce illustrations.
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FISH AND WILDLIFE SERVICE URGES UNITY AMONG CONSERVATIONISTS

WHILE pro-hunting and anti-hunting conservation groups argue about the best way to protect our nation's wildlife, the real enemies of wildlife are escaping unnoticed, warns Dan Saults, chief of information and education for the U. S. Fish and Wildlife Service.

"The danger today is that these two groups will get so emotional arguing for or against hunting that they'll not unite against the real threats to wildlife—*pollution* and *habitat destruction*," Mr. Saults said.

"Whether a person chooses to hunt wild animals or not is a matter of personal choice," he said. "But this difference should not keep the two groups from working together for conservation."

In addition, Mr. Saults pointed out that much of the sentiment against hunting is based on misinformation. "Legal hunting is not a threat to any species in this country," he said. "Indeed, the hunters and fishermen of the U. S., through money from license sales, special taxes on sporting goods and individual contributions, pay most of the funds spent on wildlife and its habitat."

While hunting endangers no species, pollution is threatening scores. Over 40 species of birds are threatened by shell thinning caused by DDE, a DDT metabolite. Pelicans, the bald eagle, 13 species of hawks and even the mallard duck are seriously affected.

Twenty states have closed rivers and lakes to fishing because of mercury levels in fish.

Our estuaries, the cradles of the sea, each day give ground to the onslaught of the dredge and the bulldozer. Chemical wastes, detergents, oil, sewage and exhausts pour into our air and waters daily. Each year brings the discovery of new pollutants and new facts concerning old ones. It will require the cooperative efforts of all those interested in conservation to stem the flow of this poison.

"This is not the time for conservationists to attack each other but to join together in bold new programs to defeat the real enemies of wildlife," Mr. Saults said. "Lest we forget, if wildlife is in trouble, so are people."

Hunters who are tired of being unduly accused of endangering wildlife will be interested in a 24-page booklet on all that hunters have done for conservation. The booklet, "The Hunter and Conservation," is available for 25¢ from the National Shooting Sports Foundation, 1075 Post Road, Riverside, Conn. 06878.

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My Friend the Coyote

I was amazed and saddened by an article on my personal friend, the coyote, concerning his recent migration eastward (*Virginia Wildlife*, June, 1971). The lead sentence was: "It is a predator we would rather not see established in Virginia."

I should think that anyone with a knowledge of predator-prey ecology would be glad to see nature restoring the larger predators in places where they are needed for the healthy maintenance of deer herds. Although they take occasional livestock, ranchers in the West are finally beginning to realize the value of the coyote. They catch thousands of rats and mice, and are also interesting and musical characters. (Some ranchers have even refused government poisoners permission to kill coyotes on their property.)

Now that these fascinating canines are coming east, I see you making the same mistakes folks in Colorado got over years ago—that any creature who kills for his food is bad, especially if he gets game we would rather take for fun, or (heaven forbid!) takes a calf who is destined to be dinner for someone anyway.

I wish you would take a few moments to look at the coyote as a character, and a necessary part of nature as well—you are not prejudiced against any other animals.

In conclusion, let me quote from Frank Dobie, western storyteller: "There are some people who care less for the wild scream of the eagle in sunlight and the free howl of the coyote in moonlight than for the offspring of some snotty-nosed old ewe."

If they were not going to be "chops" anyway, my sympathy might be moved toward those unfortunate lambs!

Anne Lewis
Wheaton, Maryland

We are not aware that we harbor prejudice against any form of wildlife in its proper place, but the coyote's place appears not to be in Virginia. Ernest Thompson Seton (Lives of Game Animals, Vol. One, Part II) says, "In primitive times the Coyote was a creature of the open spaces in the great West," and it is to the ecology of that region that the coyote rightfully belongs. While the coyote has extended its range in modern times, it is quite likely that most specimens observed in the generally forested, eastern states are not a result of such natural pioneering but are rather the result of their (or their forebears) having been imported by humans and having subsequently either escaped from captivity or having been released intentionally. Throughout the world, when wild animals have been artificially established either accidentally or intentionally in areas outside their natural range, more often than not they have become a nuisance in their new environment. Such, we fear, would be the case of the coyote in Virginia.—Ed.

A MEASURE OF VALUE

By JACK RANDOLPH

Spring Grove

THE hunters, a father and his young son, crouched low in their blind as a pair of mallards swung towards them out of the afternoon sun.

They had guarded their decoys all day. Flocks of ducks and wedges of geese traded on the horizon since dawn, but without exception they paid no attention to their decoys. Yet, each time game was sighted the hidden hunters felt a surge of excitement.

Throughout the day the father, a seasoned waterfowler, pointed out the flight characteristics of each passing species. The boy was a willing pupil and their day had passed all too quickly. In addition to the passing waterfowl the pair watched muskrats at work, listened to the heckling chatter of pileated woodpeckers in the nearby forest and puzzled over the origin of splashes and sounds made by mysterious fish near their blind. Now, for the first time that day and the first in the younger hunter's entire experience, shootable ducks were flying towards their ambush.

"Stay down!" cautioned the father as the birds approached in a sweeping glide.

Watching through the reeds that concealed the blind the father saw the flash of the undersides of the wings as the birds put on their brakes.

"Now!" he commanded, urging the boy to stand with one hand. "Take 'em both, boy!"

Quite naturally the lad took the drake first, catching it with a full charge as it hung as if suspended in the air. The hen, her wings clawing desperately at the air, headed straight up. The boy swung on her, but in his haste shot low. His next shot caught her high above the blind and sent her spinning to the water.

"Good shooting, son!" congratulated the father. "You handled them like an old pro."

The youngster's heart swelled with pride. He knew his father well and had come to learn that praise from him was well earned. He tried to keep a straight face, but the smile broke through and he beamed like the sun in the western sky. He shot a glance at his dad and saw that he was smiling too.

When the elder hunter returned to the blind with the ducks the lad fondled each one, smoothing their feathers and marveling over their beauty. He had expected the drake to be handsome, but he was surprised at the quiet beauty of the mottled hen. He had handled ducks before, scores of them bagged by his father, but somehow these were more beautiful.

As he inspected the ducks he compared them with the decoys. He stretched out the hen's wing checking to see that the blue speculum was bordered by white on two sides. He remembered his father's teaching him that the speculum on the black duck was bordered by white on



Commission photo by Kesteloo

The boy would listen intently as the men talked about such deep secrets as the proper placement of decoys in different winds.

only one side, and he never failed to examine all the birds his father had brought home for this one feature. He thought of the evenings he had spent in the basement painting the decoys and the lessons concerning the subtle differences between each species. He took pride in how closely their decoys resembled the real thing. He was secretly proud of his father and his knowledge of the outdoors.

The ducks represented more than a game dinner to the pair. For the lad they were the fulfillment of a dream that had been with him nightly as the waterfowl season approached. He had dreamt of great flocks of geese pitching into his set, but these two mallards would do nicely.

He couldn't put it into words but this small episode was the climax of many years' effort of both father and son. As he was just beginning to appreciate, the actual killing of game or the catching of fish is just the tip of the iceberg. As only accomplished sportsmen know, hidden beneath the surface are years of learning, months of preparation and weeks of anticipation.

Guns, dogs, boats, fishing tackle and outdoor gear of all sorts were the stage props in the only life the lad ever knew. He had grown up marking the changing seasons with his nose as well as his eyes. The smells of gun solvent, swamp gas, insect repellent, shad baking in the oven, crabs fresh from the pot, bait shrimp "ripening" in the sun—each was associated with a new adventure.

Until now he had been too young to share his father's hunting and fishing trips. Nevertheless he took vicarious pleasure in watching his father make preparations for the game at hand. He loved those evenings when his father's friends gathered at the house and talked of days past as they laid plans for new ones ahead. It seemed to him, from what he heard, that years ago deer were bigger and ducks thicker than they are now.

He would listen intently as the men talked about such deep secrets as the proper placement of decoys in different winds, when to use their calls and when to keep quiet, how to catch bass in hot weather, the best way to field dress a deer, and many more subjects of vital interest to a lad destined to spend a large share of his life

out-of-doors.

The youngster was amazed to learn that the assembled men seldom agreed on anything. At times he wondered how these men could have remained friends so many years, the way they argued so hotly amongst themselves. But he listened to them all and he learned. Usually he was sent to bed before the sessions broke up, but at his first opportunity he'd ask his father about the evening's discussions. Who was right, he'd ask, and whatever his father said he'd accept. After all, to him his dad was the supreme authority on everything. Little did he suspect that the day would come when he and his father would argue over the fine points of sport as hotly as he and his cronies.

Something interesting was always happening at his house. When his father was off on a hunting or fishing trip, there were those evenings of waiting in anticipation of his return to see what he would bring home. The boy learned to clean fish and game years before he was able to bring them home himself.

He sat by the hour watching his father work at the reloading bench or fly tying vise. When he was younger his father's den was a mysterious room full of feathers and furs, strange tools and rows of books, guns, fishing rods and archery tackle. The mystery was largely gone now but the room, to him, was still the most interesting one in the house. When he was very little and his father went off to war, it was in this room his mother often found him, sometimes crying and sometimes just sitting and staring. To the lad, this was more than a room: it was where he and his dad were closest.

In that room there was a special gun, a shiny 20 gauge automatic. His father had told him when he was very young that when the day came he could put the butt in the crook of his arm and reach the trigger with his forefinger that gun would be his. For years it was ritual every fall when he would call his father to the den "to do the measurin'."

His first gun was an air rifle, which was presented to him with many admonishments and a great deal of in-

struction. His dad established a set of rules governing the use of the rifle saying, "If you show me you are responsible with this, we'll see about a .22 bye and bye."

With the little BB gun he learned about sight pictures and trajectories. He quickly learned that he could actually see the BB in flight. When he told his dad that his BB gun was "broken," because the BB curved rather than flying a straight line along the line of sight, he was surprised to learn that bullets from "real" guns flew the same way.

Although his father had firmly warned him against shooting birds with his air rifle, there came a day when he couldn't resist taking a shot at a bobwhite in the back yard.

To his amazement he killed the bird with a single shot. He showed it proudly to his mother who made the appropriate remarks over his good marksmanship but felt sorry for the bird. He was surprised at his father's reaction. After all, he killed quail, too.

That evening was one of the most perplexing in his young life. His prized air rifle was locked in his father's gun rack, to stay there a month. The quail he had killed, he learned, was a hen. Much of his father's lecture presented ideas that were completely new to him.

"We don't kill for the sake of killing," he remembered his father saying. "That hen would have raised a nice bunch of birds right here near the house where we could watch them and the dogs could work them from time to time. Even during the hunting season, son, we don't overshoot a covey of birds. Even though we kill quail and other things, we are their best friends. We do everything we can to see that they live well so that we can enjoy the sport of hunting a few of them every year.

"Besides," his father added, "ground shooting a quail isn't any sport anyhow."

Then one Christmas the .22 came. With it came squirrel hunts and more lessons—more lessons than squirrels. He mastered the little rifle quickly. The transition was surprisingly easy. He didn't realize it at the time, but the .22 was not a reward for mastering the BB gun. Instead, his parents had together decided that he had shown sufficient responsibility to be trusted with a lethal weapon.

A friend had remarked that he thought the lad to be a little young for his first rifle. His mother replied that she and her husband had decided that he could handle one. "It's not so much a matter of age," he recalled her saying. "Some people are never old enough to own a gun, but in the boy's case, we know we can trust him to use good judgment."

It was the year following that the great evening came. His father was in the den cleaning his guns. The gun rack was open when the boy entered and, as was his habit, he picked out the still shiny 20 and sat down beside his father.

True to his teaching, he opened the action and made sure it was empty before he picked up a rag and began to caress the gun that would someday be his. Almost without thinking he went through the ritual of slipping

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The lessons begun with the first BB gun all led up to the moment when the pair of mallards lay on the boy's lap.

Commission photo by R. L. Crawford, Jr.



DOES *Bonasa umbellus* need a honeymoon? Should Superbird grab a cloistered quiescence before caching its cluttered clutch?

In other words, is the ruffed grouse—heralded in countless wildlife texts and magazine articles as king of the game birds because of its strength, speed, cunning, skill and courage; lauded by the American hunter as the ultimate test to meticulous musketry—is this gallinaceous cannonball a softie?

Early last spring, prior to the Virginia Game Commission's decisions on the 1972 game laws, the press reported many in the state favoring the return to the short season for the ruffed grouse. One reason they gave, so the reports ran, stemmed from the bird's alleged need for a longer rest period prior to the nesting season. While open season east of the Blue Ridge carried through January 31, the bird could be hunted west of the mountains (or in them) through February 28.

Some feel fluffing Mr. Ruffed's feathers with firearms in February is foolhardy. They envision hunters trampling through the winter woods disturbing the bird, keeping it tense and wary, and, hence, in some way disturbing its nesting habits. These persons see mountains of birds being liquidated that month, a phenomena endangering the stability of the population. Furthermore, they may feel disturbing the grouse's courting antics in late winter may also hurt this "mountaineer's" reproductive capacity. They forget hunters "bother" both deer and turkey during *their* respective courting days without any apparent ill effects to *their* reproductive potential.

The display of "gut feelings" about the ruffed grouse ignores what wildlife research has had to say. When the subject of whether the grouse season should remain extended through February was first broached, one newspaper article last spring stated, rather incredibly, that game biologists "admit that they have no technical data available which shows one way or another what effect the longer season has on grouse populations."

The first item of technical data we offer is the ruffed grouse's life cycle. The bird begins egg-laying about mid-April, taking three weeks after mating to do so and taking another three weeks to incubate them. The precocial chicks pop out of their eggs in the spring and summer and follow mama around until they can flap the air for themselves. By autumn they and the adults (which had molted during the late summer) have the strength to fly at full throttle and give the hunters fits.

Are latter 20th Century American hunters really sharpshooters enough to wipe out *Bonasa umbellus* even were they to try? Frank C. Edminster in his book on the grouse noted classic studies in Pennsylvania during 1915-43 and in New York during 1923-40 which reflected hunting's effect on grouse populations. Edminster relates a "shockingly low effectiveness" in the American hunter's attempts at bagging a ruffed grouse. Large kills per hunter went out with the 19th Century market hunter. The New York studies disclosed the average hunter bagging an ANNUAL total of from

ROUGH

AS IN

RUFFED

By BILL WEEKES
Blacksburg

0.3 to 1.7 grouse. Also Leopold reported a season take per Wisconsin hunter of 0.3, while figures of 0.3 and 0.4 grouse-per-hunter per year were reports gleaned out of Pennsylvania and Connecticut. All reports were taken in the 1930's. The New York studies of 1930-31 disclosed that hunters took sometimes up to 12.6 hours to bag a grouse. Edminster estimates only one-fourth of the hunters ever bag a bird. Out of this elite group, the average daily (eight-hour) take would range from 1.6 to 2.8 birds a day.

J. C. Phillips acknowledges that, compared to the marksmanship of the old market hunter, efforts at downing a grouse by today's sportsman are "highly amusing."

However, this is not to deny today's increased hunter population and mobility are factors requiring some modification of the hunter's freedom by way of regulation. Still, this may not be such a critical factor when one considers a very small portion of this expanded population would ever be hunting near the end of the season, the time under discussion here.

How much of a given grouse population is killed off by the gun? Edminster, recognizing total harvest to be hunter-take plus crippling loss, and applying the 25 percent hunter-success rule, comes up with figures indicating total hunter kill in New York in 1930 to be 12 percent; 20 percent in 1931 and 17 percent in 1936. Edminster estimates out of 100 eggs laid in the spring, hunters are responsible for taking five. Only five percent of all grouse eggs laid, therefore, wind up hatching, flying and falling before the shotgun.

As a means of mortality, hunting itself is not only a minor consideration, but there are indications were these birds not killed by the gun, they would die by other means anyway. That is to say, hunters kill off surplus birds. About one-third of the fall populations will show up in the spring whether birds have been shot dead or not.

Palmer and Bennett studied the relationship of sea-



Photo by L. L. Rue III

The ruffed grouse is no softie, but a hardy and resilient species whose numbers are not likely to be adversely affected by liberal hunting seasons.

son length to hunting harvest of the Michigan grouse during the fifties and sixties. They concluded a greatly extended hunting season statewide seemed justifiable. Experiments were run on equally-populated hunted and non-hunted areas throughout a period of years during which population cycles hit peaks in 1950 and 1962 and lows in 1956 and 1957. The kill on the hunted area averaged 30 percent of one population, yet the spring populations of EACH area were comparable, on the average, year after year. Incidentally, the hunted area was exposed to four times the normal hunting pressure found in Michigan, a factor suggesting that a longer hunting season would not substantially increase the grouse kill.

In a New York experiment conducted three straight years during the 1930's, two professional hunters, after the regular season had ended, were allowed to continue hunting whenever they could throughout the winter and into the spring on a square-mile area. The Nimrods became familiar with the grouse' favorite hide-aways, but when they had reduced the area's population to a certain scarcity-density, the hunters found they could not approach even within gunshot range of the "few" remaining birds. A different square-mile area was hunted each of the three years with the same results. The hunters concluded it was impossible to shoot out a grouse population.

In their Michigan hunting area, Palmer and Bennett also found late season kills negligible. About 75 percent of the total grouse harvest on the area was made during the first 15 days and almost 95 percent of the kill was made during the first 30 days of the 41-day season. This would indicate that the later it is in the season, the less probability the hunter has of bagging a bird.

These game biologists not only found that 40 percent of the grouse in an area could be removed by hunting without detrimental effect on the population

showing up for the next fall, but that even a 50 percent harvest probably would not hurt the population.

Palmer and Bennett mathematically plotted a course beyond the 41-day season and found that an extra four-week season beyond November 10 would result in an 8.7 percent increase in the year's total grouse kill, while an eight-week extension would have resulted in an upped harvest of only 12.6 percent. Palmer makes the point that when "real" winter comes, what with the snow, the cream of the available crop would already have been removed and hunters would have to work progressively harder to find birds. This implies hunter threat to bird survival becomes more innocuous with time.

The difficulty of trying to exterminate the population of a rough, tough bird like the ruffed grouse, which enjoys the added "friendship" of a mixed forest of trees that block the onslaught of bird shot, can be appreciated even more when evidence discloses other gallinaceous birds like quail and pheasant are also next to impossible to eliminate by gun alone.

In the famous Rose Lake studies outside Lansing, Michigan, during the late 1930's and early 1940's, Durwood Allen showed how trying to shoot out a population of pheasant cocks, a bird certainly no more difficult to down than a ruffed grouse, was practically impossible. The 2,000-acre Rose Lake area was subjected to 99 gun-hours in 1939 (about twice the normal pressure) and yielded 10.8 cocks per 100 acres. In 1940, with 176 gun-hours, the kill was about the same. When the gun-hours reached 234 in 1942, only 11.2 birds per 100 acres were cropped.

Allen also demonstrated that as gun-pressure increased, the bag increased only up to a certain point, and then the harvest dropped. Allen stressed the fact bird hunting is SELF REGULATORY. The harder you hunt, especially near the end of the season, the harder it is to get a bird, because of its extra-wariness. It is not surprising when Allen discloses that about half the bird hunting is done the first week of the three-week season, 30 percent the second, and the remainder the rest of the season, thus accounting for 70, 20 and 10 percent of the harvest, respectively.

Not only may the hunter be erroneously given the credit for being able to wipe out a grouse population, but in some quarters, the hunter has been blamed for causing cyclic dips in grouse numbers. Here, too, technical data indicates no correlation between harvesting and cyclic depressions. In one experiment conducted over a seven-year span, one area was hunted while another was not. The populations remained essentially the same. Edminster notes population cycles in wilderness areas where hunting has been banned altogether. In fact, Palmer suggests that a large number of grouse killed in Michigan's experimental hunted area in 1952 actually PREVENTED a crash that subsequently befell the UNHUNTED section. In the unharvested confines, the grouse numbers plummeted from 15.7 grouse per 100 acres during the fall of 1953 to 1.9 grouse per 100 acres for the fall of 1954.

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CLEARCUTTING is one of the most controversial conservation topics currently before the public.

The basic question seems to be whether or not the practice leads to environmental degradation, and both sides seem firmly entrenched in their own point of view. Critics of the practice maintain that it is harmful and are asking for a two-year moratorium on the practice until research can evaluate the total environmental impact. Advocates hold that clearcutting is beneficial and a two-year delay would represent forest mismanagement.

Clearcutting is one of the timber harvest methods used by modern foresters to manage a forest under a system known as "All-age management in even-aged

Clearcut harvesting is said to be one of the most economically feasible methods of timber harvest, and results in a healthier, more productive forest. It is also highly visible, and in the opinion of many, an eyesore and a "sin agin' Nature." As a result of this critical attention, clearcutting has been seriously questioned by many conservation-minded groups, particularly where it is being practiced on public lands. Its critics claim that clearcutting represents intensive timber management at the expense of wildlife values, esthetic and environmental quality. Its proponents claim that timber production as well as many other values, including wildlife, are enhanced by even-age management.

A clearcut is esthetically appalling; there is no ques-



A clearcut timber harvest is highly visible, esthetically appalling, and resembles the aftermath of some tremendous natural disaster.

Is the Answer

CLEARCUT?

blocks." A clearcut is accomplished by the cutting of all the trees in an area, including those which are commercially unusable. The area is then left to regrow (regenerate) all of its trees from scratch. All of the trees in the stand will be of roughly the same size and age, hence the term even-aged management, and each cut area will be an even-aged block, within the all-age forest.

Reprinted by permission from *Georgia Game and Fish*, Georgia Game and Fish Commission.

By AARON PASS

tion about that. It resembles the aftermath of some tremendous natural disaster, such as a wildfire or windstorm. Undoubtedly the camper or hiker who ventures onto such a scene in search of natural beauty will be dismayed. The hunter, viewing the slopes denuded of their mast producing hardwoods, justifiably wonders what will happen to the wildlife. The trout fisherman, seeing his favorite stream silted and muddied by the run-off from a freshly cut area, isn't soothed by statis-

tics citing the increased sustained yield of lumber from even-age management, either. These outdoor enthusiasts will readily agree that a clearcut is a very efficient method of growing and harvesting trees, but that it doesn't seem to hold much promise for them.

The Forest Service, on the other hand, makes a strong case for both even-age management and the clearcut method of timber harvest. This management system is said to not only improve the efficiency of timber management and harvest, but also to improve the habitat for wildlife. The controversial clearcut concurrently plays the role of hero and villain when both sides of the question are aired. That a clearcut resembles a natural disaster is not denied; rather it is one of the strongest arguments of its practitioners. They maintain that it duplicates, in a controlled way, the consequences of wild fires, storms, and disease which shaped the wild virgin forests which greeted the first European settlers of this continent. That a clearcut is a disaster is not argued by its critics, but they do disagree on whether or not it is controlled.

Many argue that the Forest Service should return to a forest wide all-age management system which employs a selective-cut harvest system. This method calls for the cutting and removal of trees in a standing forest as they mature; thus all age classes are represented in a given stand. Foresters object that this method leads to long term ills such as "high grading," where the repeated cutting of the best trees culminates in a forest of culls. Also since the forest canopy is really never opened, a perpetually mature climax forest is maintained with little of the understory or plant interspersions needed by wildlife.

Wildlife species vary greatly in their specific habitat needs, but the forest dwellers have some common needs which are beneficial to all. An interspersions of habitat types is one of these common needs. This refers to the availability of a variety of plants offering diversity of food and cover. This interspersions may be created by openings in the forest which permit natural plant succession, and "edge" habitat, which is the brushy border between woods and openings. Such an effect is produced by a "disruptive" ecology, or conditions that prevent the development of an entire forest to maturity all at once. In nature wild fire, floods, and disease lead to this disruption and it is this type of action clearcutting is said to simulate.

A clearcut is certainly disrupting, but is it a benefit or a detriment to the ecology of an area? At what point does the clearcut cease to be a healthy disruption in a mature forest and become a food-destroying, cover-removing, soil-eroding monster? On these specific points even professional wildlife managers disagree, but there is general agreement that, in theory, clearcutting can be beneficial to wildlife.

The Forest Service points out that a clearcut opening in a mature forest is helpful to most types of wildlife. The opened tree canopy allows sunlight to penetrate to the forest floor, stimulating natural plant succession. It

is true that production of mast (acorns, hickory nuts, walnuts, etc.) is sacrificed when a stand of hardwoods is cut, but the low growth plants which begin to sprout soon thereafter will supply woody browse and fruit (soft mast) for wildlife. The availability of browse is particularly important to wildlife in times of mast failure. Some of the important mast trees will not grow under an existing tree canopy; a clearcut opening will

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USFS photo by N. E. Hawes

Low-growing, wildlife food plants are encouraged for the first 3 to 5 years after a clearcut, but after that the maturing stand produces little mast or usable browse and may be virtually devoid of wildlife until the next timber harvest.

SQUIRREL HUNTING

By BILL ANDERSON
Grundy

SQUIRREL hunting is enjoyed by many hunters each year and many men, women and youngsters go into the woods seeking this frisky little animal.

Although not as highly sung as pheasants, grouse and bobwhite, like the rabbit, the squirrel is one of our most sought after game species. Why is the squirrel so popular? Let's take a closer look at this prolific tree climber.

All of our tree squirrels are members of a scientific family which includes such familiar mammals as the groundhog and the chipmunk. But unlike the others the tree squirrels do not hibernate in winter.

Of the members of the tree squirrels two provide most of the hunting for the most hunters. These are the eastern fox and the eastern gray squirrel.

The eastern gray squirrel is a lover of mature hardwood forest, although he may be found in pine or other softwood forest. He is found, roughly, east of a line from North Dakota to the southern part of Texas.

The eastern fox squirrel is found over much of the same range of the gray and probably a bit further west.

While the gray prefers larger timber the fox seems to do quite well in smaller, more open woodland, especially in corn country, as most farmers can verify.

Most grays will not tip the scales much over a pound and one half. However, the larger fox squirrel may well go two and one half or three pounds.

The gray squirrel will usually range in color from light gray to almost black. His belly will usually be white.

Fox squirrels, according to where they are hunted, may be rusty yellow, rusty gray or other shades of yellow mixed with black or white.

In the Southwest the hunter will find the Arizona gray squirrel in Arizona. In Mexico and the Southwest he would find a squirrel called the Apache fox.

In the southern Rockies is found the *aberti* or tasseled squirrel. North of Grand Canyon one color phase is called the kaibab squirrel and south of the Canyon is the color phase called abert.

The scattergun is heard throughout much of the squirrel woods.

Game Commission photo by Kesteloo



Photo by Bob Gooch

The gray squirrel is one of our most sought after game species.

To the northwest is the western gray squirrel found largely in parts of Washington, Oregon and California. This animal is larger than the eastern gray.

As we have just seen they are found within reach of almost everyone. The farmer in his overalls with his single barrel shotgun can slip out to the edge of his field and bag a couple. The school boy with an inexpensive singleshot .22 may hunt afternoons in a nearby woodlot, or the man who fancies a target grade rifle with a fine scope may spend a week or weekend hunting squirrels in the same woods he hunts deer.

In many areas squirrels are hunted in mild weather—no knee deep snow or freezing temperature. Tent camping trips for the family may be combined with squirrel hunting.

Like most other hunting there are two major ways to hunt squirrels. Either you sit or go. Or you may combine the two.

To be successful you should know the area that you are hunting intimately. You should scout it thoroughly a few days before season opens to find where squirrels are using. During "cutting season" in late summer or early autumn is the best time to hunt and the easiest time to locate squirrels. In a good area the ground will be littered with cuttings from squirrels' favorite foods, which includes beechnuts, walnuts, hickory nuts and acorns.

Near cornfields will also be the tell-tale signs of bushytails' trips into the field. Corn may be eaten on the stalk or carried into the woods.

Squirrels are killed with almost all kinds of guns, from handguns to the largest shotgun. The hunter should select his gun according to the type hunting he intends to do, his own ability, the time of year, weather, and number of other hunters, and the closeness of building and farm animals.

Traditionally the rifle is the arm used to shoot squirrels. However, the scattergun is usually heard throughout much of the squirrel woods. Users of both types of guns have their reasons for their choice, and most reasons are valid.

Hunters that choose rifles claim that their guns do not scare game a quarter of a mile away. They say their guns are more sporting and leave fewer cripples, and that such a fine animal as a squirrel should not be shot

with a shotgun.

On the other hand most shotgunners admit that they do not shoot a rifle well enough to kill squirrels. Furthermore, they will tell you that their shotgun is more safe near civilization and when there are other hunters afield. The man with the scattergun will argue that a shotgun on a running or half hidden squirrel is just as sporting, or more so, than a scoped .22 on a sitting squirrel.

Which gun to choose? It is the hunter's choice. Whether he uses a rifle or shotgun it should, if at all possible, be a repeater. Where on the surface a single-shot may seem more sporting, I have seen too many animals escape while a singleshoot was being reloaded. Of course, it is realized that, especially for the beginner, the singleshoot is the safest weapon.

If the .22 rifle is chosen, the hunter should become extremely familiar with his gun. He should sight it in, then practice from all different positions, at targets at varied ranges until he has the skill and confidence needed. He should practice estimating distances, then measure to see how right he is.

As for sights, the telescope has definite advantages, especially in poor light. Just remember, mount the scope low, sight it in and use a low power. Most hunters think a four power is about right.

As for caliber and bullet type, nothing is more right than the .22 long rifle. This cartridge seems to have been invented with the squirrel hunter in mind.

The target grade ammunition is excellent if the hunter takes all head shots; the standard low-velocity cartridges are also good. I have found that, when shot with a .22 solid point high speed, a squirrel often will not die instantly but will have the stamina to get away. If the high velocity loads are used, they should be

hollow points.

For the man who prefers a shotgun almost any gauge can be used from the .410 up. The main thing is for the hunter to know his gun and what it will do. I know at least one hunter who swears by a .410, especially during cutting season. It is light, says he, less expensive to shoot, and deadly out to thirty yards.

At least ten patterns should be fired with the shotgun with each of several shot sizes and different brands of shells. The shooter should also practice shooting at moving targets for he will find many of these in the squirrel woods.

If you hunt in small, thick timber number six shot is good in low-brass loads. Modified choke is right for this type hunting. But if your squirrel woods is open with tall timber and the game is hunter-wise, you had better tighten that choke up to full and use high brass shells with number five or six shot. I have known hunters to go to extremes one way or another and use number four or number seven and one half shot, but for shooting squirrels at ranges they should be shot at, number five or six is best.

When you are in the woods go slow; you can't move too slowly. Take a half-dozen steps then stop, look and listen. I have seen many knots turn into squirrels. The little nut cutters are impatient, and unless scared badly won't sit long.

If squirrels are plentiful, you may be justified to sit a long time in one place; however, the hunting will usually be more productive if you move quietly and sit no longer than fifteen or twenty minutes.

Gray squirrels will start feeding, barring extremely bad weather, at first light. Fox squirrels are out for breakfast a little later.

The only time I have found many squirrels out during the middle of the day is just before severe weather or when the mornings and late afternoons are cold, as in December or January. Under normal conditions the best time to squirrel hunt is the first three hours of light in the morning or the last three in the afternoon. During bad weather you might as well forget the whole deal and stay home.

Some people seem reluctant to eat squirrels, but for me a squirrel is a tasty treat. Perhaps some of the dislike for squirrel stems from not knowing how to prepare one for the table.

The animal should be skinned and drawn as soon as possible after killing. The carcass should then be kept as cool as possible. Any bloodshot flesh should be cut away and the meat soaked in cold water until clean. Following this, or similar methods, determines how palatable the meat will be.

There are many recipes for cooking a squirrel. My favorite is to boil the meat until tender, then roll each piece in a mixture of flour, meal, egg, milk, salt and pepper, then brown in fat. There are other recipes too numerous to mention here but you can bet that if old nutcutter is taken care of between the woods and the dinner table, he will be a choice dish whether boiled, fried, roasted or you name it!

Many hunters choose the .22 rifle as the more sporting arm with which to hunt squirrels.



STARLINGS

By MARJORIE LATHAM MASSELIN
Richmond

THE other day I noticed a bumper sticker. I collect these the way Mrs. Miniver used to collect interesting morsels, filing them away in a pocket of the mind to be rummaged through later when at leisure or in need of a conversational trifle. This one read: "Keep Your City Clean—Eat More Pigeons." It startled me a little because it is some time since I have even *seen* any pigeons. They used to come to the bird feeder and gobble up all the cracked corn, chasing the other wild birds out of their way. But, as I say, they never seem to come now. The problem is to keep the *starlings'* appetites sated so the other birds get a whack at what is left. One does not hear much about *them* now either. A few years ago the newspapers were loaded with articles about how the county was setting off explosions to drive starlings into the city, whereupon the city was obliged to take steps to drive the immigrants back to the county and so on.

Starlings *are* immigrants, you know. Some Literary Ladies a few generations back hit upon the brilliant thought that America ought by rights to have *all* the birds mentioned in the works of William Shakespeare. In consequence, the starling was imported. Shows how little we once had to worry us, does it not? Somehow our national problems seem to be a bit more pressing now and in different areas.

In any case, the starlings came, and since no one had the forethought to import any or all of their natural enemies along with them, they multiplied alarmingly. Flocks of starlings often darken the sky in the same way that flocks of Passenger Pigeons once darkened it.

When one considers the superior job we did in eliminating the passenger pigeon, it crosses the mind that with a similar dedication we could also eliminate the starling. The thing is, when one thinks "pigeon," one immediately thinks as well, "squab." And then one also thinks, "Ah, now that would vary the menu and supply a tasty treat." No one here, however, seems to have considered that the starling is as much a table delicacy as squab—or at least is considered so in Europe.

The best time to get tasty birds is either before or after the reproductive season when they are not obliged to feed their young. After you have some, they should be dry plucked and eviscerated. It is not a good idea to let them get high. They taste better fresh. Once you have them ready to cook, simply take Escoffier from the shelf and follow any of the recipes given for lark.

Like doves, there is very little meat on a starling.

The breast is about all you will want to bother with, but of course the rest of the carcass makes a very fine stock which can be served as a clear soup or with slivers of the breast meat, previously poached in wine, with aromatics added to it. It will also make a very nice aspic in which the breast meat may be molded.

The finest way to prepare them, I think, is to make up a liver pâté using whatever livers one has at hand. These may be chicken, turkey, goose, duck or any of the livers commonly found in a market. They can be combined in any convenient proportion.*

When this is ready, take small oblong individual size bread pans (or even the larger cupcake tins will do). Line each with a layer of fresh pork fat. If this is too difficult to come by, salt pork may be substituted after simmering it a few minutes to get rid of a good bit of the salt.

Into each prepared pan, spoon a layer of the raw pâté. Lay on a raw starling breast, and spoon more pâté over and around it. Set these small pans in a larger one of water and bake in a moderately hot oven, about 375° until the loaf is set and pulls away from the edges of the pan. Cool somewhat and then unmold on a rack to drain off the fat. When thoroughly cool, remove the pork covering so that only the neat little meat loaves remain.

Using the same pans (washed, of course) prepare a rich pastry dough using butter for the shortening. Chill it well, and then roll out as for a pie crust. Line the pans with this dough, and cut any remaining bits into attractive shapes for a topping.

The pastry cases may be baked separately with the pâté inserted and topped with the shaped pieces at serving time. Or if one prefers, the already cooked pâté can be placed in the unbaked crusts, covered with a crust and the edges crimped, then rebaked as a single unit. When this procedure is followed, it is necessary to have the pâté completely covered with pastry to prevent its drying out overmuch.

This is a marvelous first course at a special dinner party if it is made quite small—say in the two-inch cup cake pans—but it makes a hearty luncheon as well as a festive one if made in the tiny bread loaf pans. A restaurant near *Les Halles* in Paris used to specialize in this dish, and made quite a reputation with it.

Anything one can do with dove lends itself very well to the preparation of starling. Just to split the dressed birds and grill them in butter, adding a splash of good tart red wine to deglaze the pan and pour over the birds for serving, is quite an excellent preparation.

This has been said before, by me as well as any number of other people, but a repetition may be worthwhile. With the price of meat going up and up, it does seem a shame that we fail to make better use of the foods that are available to us as a gift of our environment. A tremendous number of people could dine and dine *well* on starling before the species is in any danger of extinction *here*.

* See article on cooking tough old gobbler, *Virginia Wildlife*, April 1970.

CONSERVATIONGRAM

Commission Activities and Late Wildlife News ... At A Glance

NATURAL RESOURCE PILOTS ORGANIZE. Two Virginia Game Commission pilots, Garland C.

Fentress and Francis N. Satterlee, were among the more than thirty airmen representing United States and Canadian conservation and wildlife organizations who met in Madison, Wisconsin, September 26-29, 1971, to form a professional organization of flyers. Now officially known as the International Association of Natural Resource Pilots, the group was welcomed to Madison by Mr. L. P. Voigt, long-time aviation enthusiast and Secretary of the Wisconsin's Department of Natural Resources which hosted the event.

In addition to the business meeting during which the fledgling group went through the formalities of organization, the airmen heard presentations from a wide variety of speakers representing aviation, conservation, and scientific interests. These included representatives from the Federal Aviation Administration and experts in the field of photographic and electronic sensing of ecological and pollution factors from aircraft. Other subjects discussed were techniques utilized in accomplishing aerial census of wildlife and waterfowl, forest fire control, and law enforcement practices.

Newly elected president for the International Association of Natural Resource Pilots is Mr. Kenneth L. Beghin, Chief of the Wisconsin Department of Natural Resources' Aviation Section. Mr. Allen C. Hoefelman, Chief Pilot for the Missouri Department of Conservation, was elected vice president.

The next meeting of the IANRP is scheduled to be held at a location in Virginia during September of 1972.

REFLECTORS PREVENT DEER-AUTO MISHAPS. The Missouri Department of Conservation has found that reflectors placed along highways at deer crossings reduce deer-auto accidents significantly, the Wildlife Management Institute reports. The reflectors, mounted on posts, flash the light from car headlights onto the roadsides causing the deer to retreat.

Missouri officials report that results have been sensational. In the 12 months prior to using the reflectors, 29 deer were killed at night along a quarter-mile stretch of one highway. During the next 12 months after installing the reflectors, there were no nighttime deer-car collisions on the same stretch. In another area, collisions dropped from 19 to two through use of the reflectors.

The reflectors, which cost about forty cents apiece, are set 150 feet apart and staggered so there is one every 75 feet along the road. Money is available through the federal highway safety fund to assist states in installation.

BIRDS OF PREY AREA DESIGNATED. The Bureau of Land Management has named some 26,000 acres of public lands as a birds of prey sanctuary, the Wildlife Management Institute reports.

The Snake River Birds of Prey Natural Area includes the canyon walls, rims, and floor of a scenic 30-mile stretch of the Snake River in southwest Idaho. The area is said to have the highest concentration of golden eagles and prairie falcons in North America. Conservationists are congratulating BLM for the move.

HIGHWAY THREATENS RARE COUGAR. The only known breeding area of the very rare eastern cougar is being threatened by a proposed highway which would traverse the animal's last bit of wild habitat in New Brunswick, according to the Wildlife Management Institute.

Already disturbed by large scale timber-cutting operations in the area, the cougar sanctuary will certainly be destroyed by the road, experts say. The exact location of the breeding area has never before been revealed by scientists who have been studying the animals for the past 24 years. They are requesting that the proposed highway be routed around the area. The Minister of Natural Resources in New Brunswick is receiving many letters opposing the road.

LAST December, long after the tackle of most fishermen had been stored away and was gathering dust until spring, some of the hottest bass fishing of the year erupted in Smith Mountain and Leesville reservoirs. Suddenly, out of the bleak, barren and sometimes bone-chilling days of the last month came limit catches of largemouth, weighing up to nearly 10 pounds.

Highly unusual? Hardly. Late season, longhandle drawer fishing is nothing new in Virginia. A handful of hardy anglers with a positive attitude and a solid knowledge of fishing have landed good catches in November, December and early January for many years.

There is little reason to believe equally good catches won't be taken this winter. Although there are occasional—and usually short lived—exceptions, most of our state is blessed with a mild winter at least until the first week of January. This makes the early months of winter ideal for fishing. For one thing, the angler will find he has the water all to himself. The skiers are gone, and so are the big-wake cruisers. Even the great majority of the fishermen have disappeared. Still there, though, are the fish. Several species, especially walleye and white bass, actually become more active than in the heat of summer.

Species such as largemouth bass may slow down somewhat, but they continue to feed, and often become bunched up better than during some other seasons of the year. The exceptionally fine bass fishing last December in Smith Mountain and Leesville reservoirs, and several other impoundments such as Carvins Cove, was found mostly in the deep water. Normally, this is the expected pattern. The bass go deep, and they don't move far, or fast. Fishermen should pursue them with this in mind.

Few fishermen last winter reeled in better catches than Rufus Eubank of Bedford County. A fishing guide, Eubank is on the water nearly every week of the year. He said that the bass fishing at Smith Mountain and Leesville reservoirs last December was better than any he had experienced, spring or fall, during his five years on the lakes.

Eubank, like most other anglers, got his fish in the deep water of the lakes, where rocky banks and cliffs tumble down into the impoundments to form sharp drop-offs. His most productive lures were the twin and single spinners, a jig-like lure with a wire projecting out from its head onto which is attached a single or double spinner. The body of the spinner-jig is dressed with either a rubberized skirt or bucktail. Eubank likes to trim part of the skirt off and add a strip of yellow, black or white pork rind to the hook. The lure, then, has a little bit of everything going for it. It sinks rapidly like a jig. It gives off the vibrations and flash of a spinner. And it offers a seductive-looking chunk of meat.

Since winter-bound bass won't move far or fast to capture even a tasty-looking dish, precision casts and slow retrieves are important techniques. This is what makes the spinner-jig, a lure now made by several manufacturers, so productive. The lure is cast to

WINTER CATCHES

By BILL
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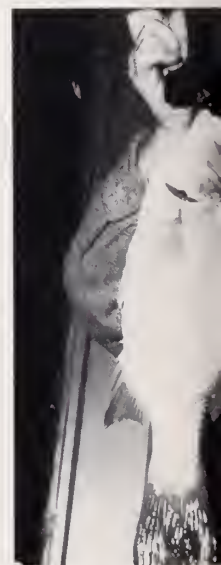
(Above) Anglers land and (below) apply measuring tape to lunker striped bass taken below Kerr Dam in early winter.



Two citation-size white bass taken by Short of Vinton in early December. Charlie J. Peak Creek white



Dozens of muskie were taken by winter fishermen around this James River tree above Buchanan.



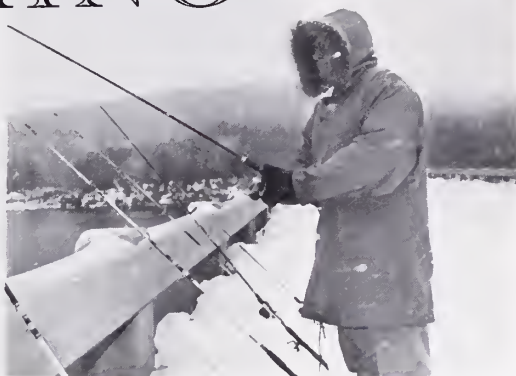
within an inch or two of rocks, stumps and sunken trees. It goes to work just as soon as it hits the water. The jig head takes it down into bass habitat and the spinner gives off enticing flashes and vibrations which appear to warm the insides of a winter bass. Eubank lets the lure sink about 12 to 15 feet deep, then begins a slow retrieve, jigging and reeling the lure much like he would a plastic worm. Other anglers enjoy good

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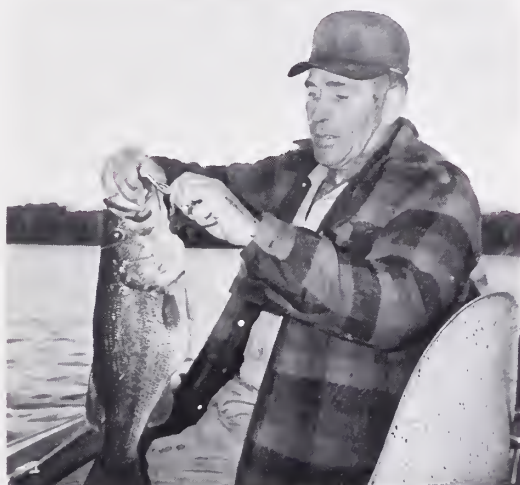
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Warm clothes, like these worn by the author (above), are necessary for enjoyable cold weather angling. Rufus Eubank (below) unhooks a fat winter bass that struck a spinner-jig.



(above) taken by Jack
below Kerr Dam last
(below) weighs huge
caught last winter.



Winter bass often are found along sharp drop-offs such as this at Leesville Reservoir.

success with a bucktail jig and plastic worm attached to the hook. Black appears to be the best color.

"You've got to get the lure right in front of the nose of a bass these days," said Eubank one mid-December afternoon last year. "They aren't going far or fast after anything."

This truth is reflected in the way the bass strike. They seldom smash the lure as if to kill it. Instead,

many strikes are quite faint, with the bass inhaling the lure and slowly swimming off.

"When you feel a bump about like a bluegill, strike hard," advises Eubank. To do this, he uses a short, gutty rod, Ambassador 5,000 reel, and 20 pound monofilament line. One bluegill-like bump last winter at Leesville Reservoir turned out to be a 9½ pound bass for Eubank. Taken around the 15th of December, it made Christmas come early for him.

When most people consider crappie, they think about spring, but a spurt of good crappie fishing, second only to the spring spawning period, erupts right out of winter. The cooling hand of fall brings these fine pan-fish out of the depths and back along the shoreline to the same brush piles, weed beds and underwater trees they inhabit in April. Many of the same techniques take them in November and December that were successful in the spring. Perhaps the major difference is that the crappie are bigger on the average, having had all summer to fatten up on shad and other foods. The fact that they are in good shape makes them full of fight.

Kerr Reservoir last winter produced some superb crappie action. Hefty strings of these silver-sided pan-fish—some averaging ¾ to 1 pound apiece—were common. Most were caught by the cane pole boys dunking minnows, but tiny bucktail jigs fished with lightweight spinning tackle also paid off.

Immediately below Kerr Dam, in the tailwaters of Gaston Reservoir, some fine striped bass and walleye fishing occurs each winter. The big stripers move upstream, to the base of the dam, where there is a rich supply of baitfish. The action takes place about October, with some of the fish remaining in the area through the first of the year. Twenty pounders are not uncommon. In fact, the largest landlocked stripers in the state are taken here.

Catching the fish, though, calls for specialized tackle. Much of the time, they wisely remain just out of normal casting range. Since it is unlawful to boat within 800 feet of the dam, fishermen working from a catwalk near the dam's edge must use long-distance surf outfits to reach the fish. Big bucktail jigs, yellow and white, are a popular lure.

About the first of December, when the striper action begins to slow somewhat, walleye take over. This fishing, done mostly after dark, lasts into the first of the year, with citation-size walleye, a fish sporting large, milky eyes and strong canine teeth, taken regularly. Most anglers use Rebel lures, which represent the shad walleye feed on.

On cold nights, and most of the nights are frosty as the wind whips across the bald face of the dam, fishermen often work in teams. A couple fish while others warm by a fire. The important thing is to keep a lure in the water all the time so that incoming schools of fish can be detected. The frigid, sleepless nights call for dedicated fishermen, but all the waiting and the cold can suddenly seem worthwhile when two or three lunker walleye are on at once.

(Continued next page)



In winter crappie move back to the same cover, such as this partially sunken tree (left), that they inhabit in the spring. A nice string from Smith Mountain Reservoir (right) cool in a snow bank.



Winter Fishing Can Be Hot

(From page 15)

Walleye also produce winter fun in the New River immediately below Claytor Lake Dam, but for some fishermen the big attraction is in the lake itself where jumbo white bass become active in the winter.

About September, white bass begin to shake off their summer stubbornness and will actively take jigs and spoons tossed or trolled. This fishing lasts until the lake freezes over, around the first of the year. Good spots to catch the spunky fish are up Peak Creek, a winding, deep green tributary of the lake, and over the sandbars between Claytor Lake State Park and the dam.

The state offers many additional winter angling opportunities. Not to be overlooked is the muskie fishing in the James River. For the past two winters, outstanding muskie catches have been taken in that part of the river from Springwood to below Buchanan. Some 50 to 100 were caught in a three mile stretch of the river in Botetourt County above Buchanan in February and early March of 1970. Others were landed in December.



Late season trout fisherman finds solitude in the Roanoke River just west of Salem.

For many years, some anglers have made good catches of trout in the western streams throughout the months of November and December. Anglers will have an additional month and one half for cold weather trout fishing this season. The trout fishing season has been extended through February 15.

To enjoy winter fishing, you must be dressed properly. The colder days call for insulated underwear, parkas, caps with earflaps, insulated boots, rain gear and at least two pairs of warm gloves, in case one gets wet. Hand warmers, hot coffee and tent heaters that can be positioned between your legs in a boat also are desirable. Extra care must be taken around water this time of the year. The heavy clothes worn and the coldness of the water can get a fisherman in trouble quickly if

he falls in.

Go prepared is the watchword of winter fishing. But remember, things can get pretty hot when the fish are crashing your lures and bait during the wintertime. Now is no time to store your tackle.



Ten pound, 13 ounce muskie (left) landed in James River last December by Charles Stone of Roanoke. A hot pot of coffee (right) will warm the insides of this wall-eye fisherman.



encourage these species.

A clearcut site being regenerated to hardwood will theoretically produce wildlife food during each stage of its plant succession. These facts tend to indicate that a well planned series of clearcuts of *reasonable size, well dispersed* in both *area* and *time*, could contribute significantly to a forest's wildlife population.

The benefits of even-age management and clearcutting sound good in theory. Increased timber production and high quality wildlife habitat all in one package is like having your cake and eating it too. Unfortunately, practice often does not resemble theory and it is here wildlifers part company with loggers.

In forest management realities, as with the having and/or eating of cakes, choices are often made between efficient economics and ecologic considerations. In such cases, it is not unusual for the ecology to be found wanting, and as a result many professional wildlife managers view clearcutting (the practice, not the theory) with mixed emotions.

One particular sore spot is the allowable size of the cut. It is more economical to log as large an area as possible, but from the wildlife standpoint 50 acres is about the maximum beneficial size. This size is only a general guide, however, and the full benefit is realized when such factors as terrain, tree species, location, and configuration of cut are taken into account.

Dispersion of cuts over the whole forest area is also a critical factor, since four adjoining 50 acre harvest sites is in effect a 200 acre clearcut. The key benefit of even-age management is a localized interspersion of plant species and ages, and the large scale even-age stand of brush following a big clearcut offers little more diversity than did the mature forest.

One particular aspect of clearcutting is causing a great deal of distress to wildlife managers. Timber Stand Improvement is the official terminology, but it means changing the species of tree growing in a particular stand. The site, after the cut, offers an excellent opportunity for stand conversion to a more "desirable species." Although just what constitutes a more desirable species is subject to a considerable latitude of definition, it usually depends on what values are allowed to predominate in the management system. Wildlife values are best served by natural regeneration to mixed hardwood or hardwood/pine forest that now exists in the mountains. Lumber production leans toward the more efficient, pure pine stands, and we are seeing an increasing loss of natural hardwood stands to the faster growing pines.

A normal hardwood rotation period is 80 years between harvests, as it takes this long for the trees to mature into sawlogs, whereas a pine stand can be harvested in 40. It doesn't take a genius to figure out that a pine stand will, in a given period of time, produce more lumber than a hardwood stand. In regard to wildlife values, however, the hardwoods are vastly superior in

food production. A naturally revegetating hardwood stand will, as mentioned earlier, produce some wildlife food during all stages of its rotation period. A pine planting produces only the low growing browse plants for the first 3 to 5 years after the cut, after which the pine seedlings become large enough to shade out the browse. The maturing pine stand produces little usable mast and becomes a virtual biological desert until the next harvest.

The conversion of a stand begins with a clearcut harvest, perhaps leaving some seed trees of the desired species (pine). The site is then extensively prepared by bulldozers to destroy the existing hardwood root systems, and the area is then seeded or planted with pine. The stand will then be subjected to improvement cuts and herbicide treatments to eliminate hardwood species which have infiltrated the stand.

This intensive site preparation presents another critical environmental problem. Steep slopes are prone to erosion after any clearcut, but when the soil is disturbed by bulldozing the erosion problem is multiplied. The silty runoff from such a site will increase sedimentation and water temperature of the streams in the watershed.

Even a stand being regenerated to hardwoods will show a marked drop in wildlife food production between the time the trees grow large enough to shade out the low browse plants and they begin to produce mast. This problem can be helped by a series of selective cuttings in the pole-sized forest to allow browse openings. These selective cuts must be well planned, however, as the criteria by which the stand is "weeded" will greatly influence its final composition.

It is unfortunate that the most desirable trees from the timberman's standpoint are often poor producers of wildlife foods. Hollow den trees, used as homes by many wildlife species, also are victims of weeding cuts, and even the comparatively long 80-100 year hardwood rotation is insufficient to produce such trees. Although timber harvest guidelines call for the protection of food and den trees important to wildlife, the application of these guidelines at field level is usually left to timber-management specialists who oversee the harvest, rather than professional game managers who wrote the guidelines.

Professional game managers will concede that clear-cut harvesting has the potential to be a useful management technique if wildlife values are taken into proper account in its practice. The recognition of these values doesn't necessarily mean complete abandonment of timber production, but does demand more comprehensive management techniques. It will also require the acknowledgment that a forest's beauty and its wildlife are just as important as the lumber it will produce. The clearcut is a useful tool for both wildlife and timber management, but as it is currently being practiced in some areas it is inconsistent with sound conservation methods which would promote multiple use of the forest.

The subject of cycles introduces the only time when hunters could conceivably do permanent harm to a grouse population: that is, when the population is trying to bounce back from one of its periodic depressions. Then perhaps no open season at all may make good sense for a season or two—until the grouse “takes” to the upswing.

But when the grouse numbers are normal, or when the peaks are high, a ruffed grouse season might even be extended into March without hurting the population. In one grouse range in Minnesota, Ralph King estimates 40% of the grouse could be taken, still leaving



“What’s wrong, Pal? You look flushed!”

another 12 percent of the population to die off naturally in the winter, and even yet permitting the MAXIMUM NUMBER of breeders for the spring.

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the stock into the crook of his arm and reaching for the trigger with his forefinger.

“Well, I’ll be darned!” said his father.

The boy looked up, slightly startled, and followed his father’s gaze to his trigger finger—which was curled neatly around the trigger!

“I can go hunting ducks this year, Dad?”

“It looks that way,” answered the father, grinning.

A couple of weeks later the lad attended a hunting safety course sponsored by his dad’s club. It was surprisingly easy because his father had taught him well, but the classes tied together much of what he had been taught and gave everything a little more meaning.

Shotguns were new to him and he was overwhelmed by how much he had to learn. For weeks the boy heard little more than shot sizes, choke, lead, and gun safety. His father put him through endless dry firing sessions, insisting that he develop the habit of snapping the safety off only as the gun was traveling to his shoulder.

His 20 gauge was a three inch magnum, but he was permitted to shoot only the standard shells at first. The “Roman candles,” as his father called them, would come later.

The first time he shot the 20 it kicked like a mule. His father had set up some newspapers forty yards away on which he had drawn some big circles. From them he learned about shot patterns and his confidence in his ability to hit a flying target soared, but only momentarily.

Later, when he shot at clay birds thrown from a hand trap, the gun didn’t seem to kick at all. But hitting those clay birds was something else!

He couldn’t understand why it was so difficult hitting something with patterns of shot bigger than garbage can covers. It took some doing, but his father finally taught him to swing through the target and to follow through after the shot.

The limited range of a shotgun disappointed him at first. He just didn’t see any sense in a shell as large as a shotgun shell having less range than a tiny .22. Yet, before the season opened the youngster was a fair to middling wingshot with a better understanding of his gun’s limitations than many older gunners.

All of this led to this day, this moment when the pair of mallards lay on the boy’s lap. He didn’t think of it then and probably wouldn’t for years to come, but this moment of triumph was built upon a solid foundation of teaching and learning, of trying and succeeding and failing.

These things and more are the essentials of outdoor sports. They are a complex mixture of people and wildlife, of smells and sights, of hushed breakfasts in the wee hours and the sweet fatigue that follows a day out-of-doors. It is a web of frustrations and victories and of the satisfaction of at least having tried. The lad would learn that these things and the people and wildlife will blend into memories which, in the long run, are our true measures of value of our lives.

Know Your **WARDENS**

By F. N. SATTERLEE
Information Officer

"MICKEY" McGUIRE MORRIS



On September 1, 1951, McGuire Morris, Jr., a native of Amelia County, joined the Virginia Game Commission as a warden and was then able to combine his love for the out-of-doors, sports, and hunting with another of his long time interests—law enforcement.

Since August of 1966, "Mickey," as he is known to his countless friends, has been Supervising Warden for the twenty-county Patrick Henry District in central Virginia.

In addition to his work with the Commission, he is active with many civic organizations and is a member of the board of directors of the Virginia Wildlife Federation.

In 1961 he was named "Warden of the Year." Another award of which he is equally proud is that of "Wildlife Conservationist of the Year," presented to him by the Virginia Wildlife Federation in 1967.

Mr. Morris and his wife, the former Edith Ann Dunkley, live in Powhatan. They have three daughters.

Darrell A. Ferrell joined the Game Commission in November of 1955 serving as a warden for Stafford County until May 1963, when he was appointed Field Educational Services Coordinator and assigned to the Education Division.

In July of 1971 he was selected to become the Assistant Game Warden Supervisor for Education in the George Washington District. In this capacity, which is a newly created position, he will have the dual responsibilities of Education and Law Enforcement.

Darrell was born and raised on a farm in King George County and as a youth learned to like the out-of-doors. He trapped and fished and from his father and grandfather learned a deep respect for wildlife. The area in which he lived was populated by people who respected the law and wildlife. Being a warden has enabled him to serve his fellow man, to be outdoors and to work with animals.

He was recently elected as one of the National Directors of the Izaak Walton League of America, from Virginia.

He is married to the former Nathleen Sacrey of Falmouth, Va., and the couple make their home in that city with their one child, Carolyn, age 6.

DARRELL A. FERRELL





Chester F. Phelps

PHELPS GETS WATSON AWARD

CHESTER F. PHELPS, Executive Director of the Commission of Game and Inland Fisheries, received the coveted Clarence W. Watson Award during ceremonies at the 1971 annual meeting of the Southeastern Association of Game and Fish Commissioners in Charleston, South Carolina. The award is presented annually to the outstanding conservationist of the South and Southeast selected by the Award Committee of the 16-state Association on the basis of past performance and accomplishments. Phelps' record of progressive game management innovations in Virginia during his 32 years on the Commission staff and 13 years as Executive Director were cited, as was his record of distinguished service in major offices of national and regional wildlife organizations, including the presidency of the Southeastern and International Associations of Game and Fish Commissioners.

(Game Commission photo by Satterlee)

GAME DIVISION 1970-71 SUMMARY

THE 1970-1971 fiscal period was a very good year for wildlife management and Virginia hunters. A total of 15,658 additional acres were obtained for public management and hunting either through land purchase or by enactment of cooperative working agreements, primarily with the Virginia Division of Parks. Management activities were varied and intensified. More stress was placed on producing wildlife habitat through prescribed burning and timber management. Sale of timber products on Game Commission land achieved new highs.

During the hunting season sportsmen accumulated record totals in recreational use of management areas. New state highs in wild turkey harvest were achieved during both the fall and spring seasons. Deer and bear kill were among the highest ever recorded.

After ten years of experimental stocking, Virginia's hunters were permitted to hunt pheasants for the first time. A two-day season in November produced a statewide harvest of 229 birds.

Experimental stocking of game birds continued. Biologists worked with more farm game cooperators than ever before. Planting material was produced on eastern game management areas.

Game Division personnel continued working on research, survey and inventory projects on all major game species. New state records were attained in dove trapping and banding operations. Unique techniques introduced included experiments with both grouse and pheasant live-trapping and transplanting.

CONSOLIDATED REPORT ON STATEWIDE MANAGEMENT ACCOMPLISHMENTS

Roads for Hunter Access:	
Miles Constructed	24
Miles Maintained	531
Boundaries:	
Miles Posted	212
Trees Planted for Food and Cover:	55,873
Herbaceous Seeding:	
Acres Planted	4,306
Miles Seeded	132
Prescribed Burning (Acres):	10,212
Mowing, Discing and Spraying (Acres):	4,826
Waterholes Built or Repaired:	38
Saltlicks Maintained:	534

PLANTING MATERIALS DISTRIBUTIONS

No. of Cooperators	Game Bird Mixture	Bicolor Lesp.	Sericea Lesp.
3,091	19,031	—	—
1,394	6,421	301	—
1,550	8,575	—	—
2,708	21,500	—	905
871	8,920	—	—
1,213	12,980	—	—
812	6,876	91	596
572	3,390	—	—
2,396	10,140	36	—
Totals: 14,607	97,833	428	1,501

ACRES ACQUIRED FOR PUBLIC HUNTING

LAND PURCHASED		
County	Area	Acres
Augusta	Goshen	17.90
Washington-Russell	Clinch Mountain	2,533.12
Washington	Clinch Mountain	300.00
Total:		2,851.02

COOPERATIVE AGREEMENTS		
	Counties	Acres
False Cape State Park	City of Virginia Beach	1,000
Pocahontas State Forest & Park	Chesterfield	4,000
Barbours Hill State Park	City of Virginia Beach	800
Oconeechee State Park	Mecklenburg	3,300
Smith Mountain State Park	Bedford	1,200
York River State Park	James City	2,507
Total:		12,807

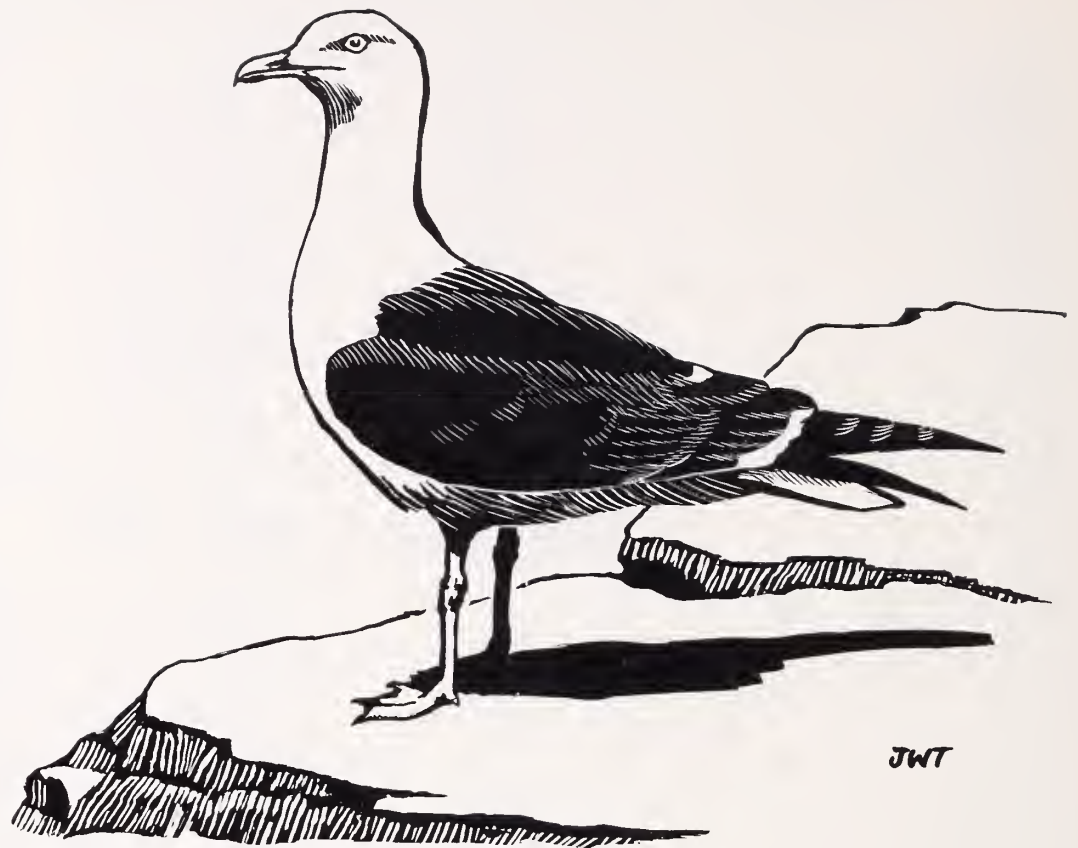
MANAGEMENT AREAS—ESTIMATED RECREATION PROVIDED (USER VISITS)

Area	Hunting	Fishing	Associated	Total
State Forest	25,000	5,000	15,000	45,000
James River	800	1,000	500	2,300
White Oak Mountain	2,500	500	700	3,700
Fairystone Farms	4,000	—	1,500	5,500
Coop. Areas (East)	30,000	10,000	5,000	45,000
Clinch Mountain-Hidden Valley	5,000	55,000	4,000	64,000
Comers Rock	100,000	65,000	9,000	174,000
High Knob	50,000	20,000	12,000	82,000
Hurricane	75,000	57,000	10,000	142,000
Poor Valley	18,000	10,000	3,000	31,000
Flannagan	1,700	10,000	4,000	15,700
Arcadia	35,000	25,000	55,000	115,000
Dismal	25,000	10,000	3,000	38,000
Stony Creek	40,000	20,000	20,000	80,000
New Castle	125,000	50,000	30,000	205,000
Owens-Illinois	35,000	10,000	5,000	50,000
Havens	2,000	—	1,000	3,000
Wunder	1,600	—	—	1,600
Rapidan	7,000	—	—	7,000
Highland	15,000	—	—	15,000
Goshen-Little North Mt.	20,000	—	—	20,000
George Washington Forest So.	—	—	—	302,513
George Washington Forest No.	—	—	—	342,365
Gathright	5,625	12,290	1,863	19,778
Quantico	24,841	—	—	24,841
Weston	1,600	—	500	2,100
A. P. Hill	17,122	—	500	17,622
Brunswick	500	—	—	500
Elm Hill	571	—	2,137	2,708
Hog Island	190	—	—	190
Kerr Reservoir	40,000	—	—	40,000
Saxis-Mockhorn	450	—	200	650
Camp Pickett	9,880	13,000	63,190	86,070
Powhatan-Amelia	2,650	975	6,090	9,715
Pocahontas-Trojan	1,200	5,000	—	6,200
	722,229	379,765	253,180	2,000,052

GAME HARVEST—WILDLIFE MANAGEMENT AREAS—(ESTIMATED)

Area	Deer	Turkey	Quail	Dove	Squirrel	Rabbits	Bear	Grouse	Waterfowl	Raccoon
State Forest	400	50	1,000	500	2,000	4,000	2	250	—	—
James River	6	5	75	300	200	200	—	—	—	400
White Oak Mountain	10	—	700	1,000	300	500	—	—	—	—
Fairystone Farms	30	5	100	—	4,000	300	—	—	—	—
Cooperative Areas E.	200	50	1,000	200	3,000	2,000	—	—	—	—
Arcadia	500	200	—	—	5,000	5,000	10	800	—	—
Dismal	100	20	—	—	3,000	3,000	2	1,000	—	—
Stony Creek	300	100	—	—	2,000	1,000	3	400	—	—
New Castle	87	200	—	—	5,000	5,000	7	800	—	—
Owens-Illinois	100	50	—	—	3,000	5,000	20	750	—	—
Havens Refuge	15	15	—	—	500	300	1	100	—	—
Comers Rock, Gullion F.	450	150	—	—	11,600	—	1	3,000	—	200
High Knob-Breaks	60	—	—	—	8,200	—	—	2,000	—	300
Hurricane-Feathercamp	300	75	—	—	9,500	—	1	2,500	—	250
Poor Valley	50	40	—	—	1,600	—	4	400	—	100
Flannagan-Hogy-Pond	—	—	—	—	1,500	—	—	400	—	200
Geo-Wash. Forest-S.	4,406	1,566	2,000	—	45,000	3,000	108	6,500	—	—
Geo-Wash. Forest-N.	3,651	1,061	4,000	—	30,000	4,000	60	6,000	—	—
Gathright	150	5	500	—	500	800	2	50	—	—
Quantico	1,002	37	1,449	667	1,668	1,812	—	178	353	8
A. P. Hill	704	40	908	1,121	1,303	155	—	—	22	—
Brunswick	35	5	400	—	—	300	—	—	—	—
Elm Hill	—	—	40	3,011	8	12	—	—	—	—
Kerr Reservoir	25	15	1,000	2,000	2,000	—	—	—	100	—
Saxis-Mockhorn	—	—	—	—	—	—	—	—	300	—
Camp Pickett	338	23	3,604	2,266	1,738	603	—	—	84	—
Powhatan-Amelia	34	7	300	500	210	160	—	—	25	—
Wunder	10	7	—	—	100	—	—	—	—	—
Rapidan	8	—	—	—	500	—	26	100	—	—
Highland	130	—	—	—	500	—	1	600	—	—
Goshen-North Mt.	225	70	—	—	500	—	3	600	—	—
Pocahontas-Trojan	—	—	—	—	—	—	—	—	1,950	—
	13,326	3,796	17,076	11,565	144,427	37,142	251	26,428	2,834	1,458

*Bird
of the
Month:*



Black-backed Gull

By JOHN W. TAYLOR
Edgewater, Maryland

THE black-backed gull has increased markedly in recent years along the middle Atlantic coast. Early lists of Virginia birds record it as very rare in winter, and, until the 1950's, the sight of one was worthy of special note. During the last two decades, its status has changed notably, and now it is of regular occurrence on the Bay and its tributaries in both summer and winter. It is much less frequent during the warmer months, when the bulk of the population moves north to breed. Birds seen hereabouts at that season are probably non-breeding stragglers.

The increase of this species is coincidental with a southward extension of its breeding range. Most black-backs breed in the far north, even to Greenland, but more of them are now using the rocky islands of the New England coast. A similar expansion is taking place with its near relative, the herring gull.

The black-back is perhaps the easiest of the gulls to identify. It is our largest gull, and the only one with such dark wings and back. Both primaries and secondaries are tipped with white, forming a bar across

the edge of the wing. The bill is yellow, with a characteristic scarlet patch towards the tip of the lower mandible. The huge wing expanse of this bird attracts attention when it is flying in the company of other gulls, and at rest its heavy body and powerful bill are conspicuous. Its croaking, guttural notes are distinctive, too. Immature plumages can cause trouble, as they resemble corresponding stages of the herring gull, but the larger size, heavier bill and more contrasty coloration of the black back betray its identity.

The black-backed gull does not have a particularly engaging personality. Belligerent and aggressive, it is a notorious thief, frequently robbing smaller gulls and other sea birds of fish they have captured. It is a menace to other species which use the same nesting islands, devouring not only the eggs and chicks of its neighbors, but even killing the adult birds. It has been known to kill birds as large as a coot, wearing them down with repeated attacks. On the other hand, it does good service as a scavenger, devouring the dead fish and garbage that infest too many of our ports and harbors.

ON THE LIGHTER SIDE

By TONY PHOENIX

HOW TO GET UP IN THE MORNING

THERE is no easy way to get out of bed. Even on hunting trips, the first five minutes are pure torture.

Oh, it varies, of course. Some fellows claim they don't have any trouble at all getting up. But that type usually causes trouble for the rest of mankind.

For instance, the cheerful question, "What time do you fellows want me to get you up in the morning?" will strike fear in the hearts of seasoned hunters. It means you've got one of *them* amongst you.

It also means that the ball of fire asking the question is going to get up before anybody else, and will save the whole day for the others by getting them out of bed.

I've noticed that these types are seldom asked to go on an extended hunting trip more than once. They spend their lives cheerfully getting the rest of the world up and moving. They are, however, like the man without a country. They do a lot of moving.

Eventually, they probably fall in with others like themselves who band together and form a group that stays awake and makes a nuisance of themselves during the entire deer season.

But consider the average guy. You or me. We do have our little problems getting out of bed. There are ways—some drastic!—of getting yourself started.

For example, one fellow I know used a simple Big Ben wind-up alarm clock to devise an ingenious and startling way to get his feet on the floor on November mornings.

"It's real simple," he told us on the first night of hunting season at a camp in Highland County.

"I'll set the alarm clock and a tin can full of water on the shelf above the bed. I'll tie a string from the wind-up stem on the alarm to the top of the can. When the alarm goes off and the stem begins to turn, it'll tip the water over on me. Of course, I won't wait for that to happen. I figure I'll have two seconds to spring out of bed before the can tips over."

He figured wrong. Indeed, it took the water can two seconds to turn over, but it took him two and one-half seconds to wake up.

The can of water soaked him and his short-tempered bed partner—a man, incidentally, who fought the idea from the beginning and who agreed to sleep with our creative friend only after he was forced to by the drawing of straws.

The alarm going off to the accompaniment of a cold shower caused a brief but spirited fist fight which woke everyone up.

I don't recommend this system. There's an easier one.

I know a hound man by the name of Jake whose dog helps him get up. The trick is based on Pavlov's famous experiments with conditioned reflexes in dogs, although Jake doesn't know it and doesn't care. He only knows that it works in a pleasant sort of way.

Jake will set his clock at, say, 7:30 a.m. When the alarm goes off, his hound dog, who is allowed to sleep inside the camp, is trained to run to Jake's pillow and begin searching for a dog biscuit Jake has hidden there the night before. The outcome is always the same. Jake is pleased with his scientific experiment, he's glad to see the friendly dog, and the first thing you know, Jake has his feet over the side of the bed and is carrying on a conversation with Old Blue. He gets up in a good humor and manages to set the mood for the entire hunting party. Trouble is, Jake and Old Blue are hard to get. They're booked three years in advance.

Another man I know has a system that works, but unlike Jake's method, it usually gets him started in a bad mood.

This man's brother-in-law bagged a trophy deer one year and got his picture in the local paper. Now, the man takes the newspaper clipping showing his smiling brother-in-law and places it under the alarm clock. When he reaches to shut off the the alarm clock, he is reminded of what his wife's brother did, remembers how the deadbeat gloated and bragged about it, and immediately he's too mad to go back to sleep. Like I say, this isn't the best system.

There is one final method that is almost 100 percent effective.

Make your wife a solemn promise that you will pack up, leave the hunting camp and come home if you oversleep. Also, tell her (Scout's honor) that you will clean the garage, fix the automatic washer, take her shopping and have her mother over for dinner.

I've never known a man to lie abed very long with a promise like that on his mind.



Edited by HARRY GILLAM

Cat Slayer



These four whiskered giants succumbed to the offerings of Richard D. Gordon of Martinsville who really seems to have the Smith Mountain channel cats figured out. This quartet ranged from 10 to 15 pounds. He earlier caught a 17 pound 8 ounce striper at Buggs Island and landed at least two other citation cats on a later trip.

Game Farm Offers Technical Assistance

Game farming is catching on in Virginia, according to Dennis Hart, Superintendent of the Virginia Game Farming Program.

Hart, whose office is at the State Game Farm in Cumberland County, says that the Game Farm is expanding its outreach. Response is given to interest by sportsmen, farmers, and conservation-minded people in general. Many people want to raise and stock game on their own farms and on places where they have special interests. Other people want to raise game to sell. There is a growing commercial demand for game for shooting preserves and sportsmen who want to stock. Then, too, many people see the value of improving habitat as a means of attracting game and aiding it to propagate in the wild state.

Through all of these channels game, particularly various species of pheasants, is being recognized more and more as a crop to be grown and harvested, or just enjoyed for being there like wild flowers and songbirds.

Hart says that while raising game as usual at State Game Farm this year,

many amateur, hobby and professional game farmers, too, have been aided in broadening the State's overall game farming industry. More than two thousand hatching eggs and five hundred day-old chicks have been sold and advisory assistance given to the buyers.

Personnel at State Game Farm receive visitors year around showing and explaining practical game farming facilities and techniques. This objective is furthered, also, by correspondence with inquiries. The game farm office gives personal attention to technical questions and provides many "leads" as to sources of game farming information (books, booklets, magazines) and sources of equipment and supplies for game farming. Requests for information should be addressed to Cumberland Experimental Game Farm, Cumberland Court House, Virginia 23041, or phone 375-5561.

Shooting Preserve Directory Available



**NORTH
AMERICAN
SHOOTING
PRESERVE
DIRECTORY**

A directory of shooting preserves open to the public is free by writing the National Shooting Sports Foundation, 1075 Post Road, Riverside, Connecticut 06878, the Wildlife Management Institute reports. The 1971-72 directory lists over 400 preserves along with addresses and telephone numbers. Along with hunting, many preserves now feature fishing, clay target shooting, and other activities.

Turkey Film Placed in Game Library

The Commission of Game and Inland Fisheries has added the film, "Return of the Wild Turkey," to its film library. The 30 minute color film with

sound traces the life history of this magnificent game bird and shows how it was brought back from near extinction by the license fees of concerned sportsmen. Included are some seldom filmed scenes of fights between gobblers and of hens nesting. The movie was produced by biologist Glenn Chambers of the Missouri Game Commission, who spent three years in the wilds getting the spectacular footage. The film brought a standing ovation when shown at the National Wild Turkey Symposium.

This and other films in the Commission's film library are available free to conservation clubs, civic groups, community organizations, scouts and schools for scheduled showings.

Federation Elects, Honors Satterlee



Virginia Wildlife Federation President Carl Wiberg passes the gavel to his successor, Cliff Golden of Norfolk, who now takes over the reins of the organization. Below, Wiberg presents an award to Game Commission Information Officer Francis Satterlee for his work as Wildlife Week Co-Chairman and other contributions to the work of the organization.



VIRGINIA WILDLIFE



Edited by ANN PILCHER

"Free Spirit" Endangered



Commission photo by Kesteloo

Visitors to Virginia's 1971 State Fair examine one of numerous mounted specimens displayed at the Game Commission exhibit planned by L. G. Kesteloo, Audio-Visual Supervisor. The bald eagle, "free spirit, high soaring and courageous," has been the symbol of the United States of America since 1782. Found most often along shores of oceans, lakes, or rivers, the southern race of the Bald Eagle was officially classified as "endangered" in 1967. Penalty for shooting an eagle is \$500 fine or 6 months imprisonment.

Environmental Quality Index

America's environment continues to deteriorate, according to the National Wildlife Federation's third annual Environmental Quality Index.

Air pollution remains the nation's most serious environmental problem. National standards required by Congress give some hope things may begin

to improve as 1975 approaches, but the trend in air quality continues down. As in the past, automobiles, electrical generating plants and coal-burning industries are the main culprits.

The nation's water is still incredibly foul but the bottom may have been reached. The 1971 EQ Index shows no decline from 1970 levels. More and better sewage treatment plants and industrial clean-ups are credited with preventing further water degradation.

America continues to exploit mineral resources without sufficient regard for the future so the Mineral EQ Index is down from 1970. Users are out running explorers and known reserves of many vital metals will not outlast this century. Recycling saves only a small fraction of the nation's minerals.

Man's growing population and its pollution have put additional stress on wildlife and the Wildlife Index continued down in 1971. Loss of habitat is the major danger for wildlife with chemical pollution of air, water and land a close second. Some 101 species are listed as endangered.

Population concentration near the two coasts in tense, polluted cities has pushed the EQ Living Space Index down during 1971 and the trend appears to be headed further down. Until a sound national land use policy and public transportation systems become reality, the EQ says living space problems are going to get worse.

Due to an 87 percent harvest of allowable cut in the National Forests last year, the Timber EQ Index is up slightly over 1970. But the upward trend is shaky in the face of pressures for increased cutting and losses from burning and disease.

Soil quality, highest on the EQ Index, has slipped from 1970. Bulldozing, over-fertilization and erosion continue to destroy valuable soil resources.—NATIONAL WILDLIFE FEDERATION (Graphically illustrated in color, 1971 EQ Index is an impressive 16 page presentation of environmental problems. This 3rd annual EQ Index, which ranges in cost from \$.25 each for 2 copies to \$.09 per copy when 5000 are ordered, is available from National Wildlife Federation, 1412 16th St., N. W., Washington, D. C. 20036.)



Theme of the Virginia Forests, Inc., 20th annual "Keep Virginia Green" poster contest is "Wonderful Wood—A Forest Product." Open to Virginia school students in grades 1-12, the contest ends December 15 and offers prizes totaling \$3,000. Young artists: Have you entered through your school?

And STUDENTS IN GRADES

5-12: Don't forget our own Game Commission—Izaak Walton League sponsored Wildlife Essay Contest which ends January 14, 1972. Plan to submit an essay, through your school, on "How Wildlife Conservation Needs Can Be Met in My Community." \$3,600 in prizes offered, including \$1,000 college scholarship.

What Every Parent Should Know

This 8-page booklet recently published by National Shooting Sports Foundation, 1075 Post Road, Riverside, Conn. 06878, deals with such parental questions as Why do our youngsters want to shoot? How is shooting different from other sports? How old is old enough? Must I become a shooter too? Isn't shooting expensive?

WHAT EVERY PARENT SHOULD KNOW...



WHEN A BOY OR GIRL WANTS A GUN

National Wildlife Federation

1971 INDEX



ON THE WATERFRONT



Edited by JIM KERRICK



Photo courtesy Bruno & Associates

Sailboards are probably the easiest and among the least expensive ways to learn to sail. Most boards have a single lateen-rigged sail, making them simple to sail. Unlike some of the more basic designs, sailboards are impressive performers, and while these surfboards with a sail are gentle and forgiving in the hands of a beginner, they become ultra competitive in the hands of an expert.

Why A Sailboat Sails

For some reason or other, most people seem to think that there is something mysterious and extremely difficult about sailing. It is an art, they reason, visited upon a select few. Not so.

Anybody can learn to sail. All it takes is the willingness to try. Granted, becoming an expert sailor is something else again. There is a lot of sailing experience necessary before a person is ready to, say, challenge for the America's Cup. Anyway, we're not trying to make you an expert; our wish is to introduce you to the world of sailing.

Let's look at the equipment necessary. There is the boat, first of all. This boat will have one or more masts whose purpose is to hold sails. Then there is the water, needed to float the boat in; you, to guide the boat over the water; and lastly, some wind to push or pull the boat along. If any one of these ingredients is missing, you can't sail the boat.

What makes a sailboat sail? It's easy. There are two simple laws of physics which you learned years ago in class and promptly forgot. The first law,

translated into sailing terms, says that if a boat is sailing downwind, or running, the wind, being behind, simply pushes it along. To take advantage of this, the sail is positioned, or trimmed, so as to present its maximum resistance to the wind. Thus the sail should be roughly at right angles to the direction of the wind, no matter in what direction the boat, itself, is going.

The second law comes into effect when the boat is sailing against the wind. The sail now becomes an airfoil, just like the wing on an airplane. The wind exerts pushing pressure on the windward side, and pulls on the downwind side because of the vacuum created. The correct sail angle is approximately 45 degrees from the wind to take best advantage of this point of sail.

When a boat is on a reach, i.e., sailing across the wind, both pressures are at work at once, and the boat goes fastest of all.

All possible points of sail are thus covered. No boat will sail directly into the wind; in fact *most* boats won't sail into the wind, or point, higher than about 45 degrees either side of the wind direction. A boat will sail, however, anywhere else in the other 270 degree area.

Now we come back to the hull of the boat. The hull floats in the water, displacing its own weight. Therefore there is a certain amount of resistance which must be overcome before the hull will come in motion. When wind pressure is sufficient to overcome this drag, you sail.

Except when running directly before the wind, a third set of forces comes into play. It is obvious that when the wind pushes on the sail it also pushes on the rest of the boat. Therefore, except when running, there will always be a sideways pressure on the hull. To overcome this, it is necessary to present enough counterbalancing force so that the boat will not sail sideways. Achieving this is accomplished by adding a keel, a centerboard, or a combination of the two to the underbody of the hull.

A keel is a permanent projection from the centerline of the hull sticking down into the water presenting an amount of area which resists the side pressure on the hull. A centerboard does the same job, but it consists of a metal or wood flat plate which may be raised or lowered through a trunk in the center of the boat. Some boats use a combination of the two. Sailboards, which look like small surfboards with a sail, use a similar apparatus called a daggerboard, which is raised or lowered through a slot in the hull. In all cases, though, the principle is the same . . . to overcome the sideways pressure on the boat.

The last item necessary for complete control is the rudder. This is a movable vane which uses the pressure on the hull and the speed of the boat through the water to keep it moving in a straight line or to change direction.

This then is all there is to the properties involved and the basic physics of sailing. Of course, knowing just this won't make you a sailor, but if you understand the principle of what you are trying to do, you will be able at least to handle the boat and sails so that it will go in the direction you point it. And you can have fun. Beyond that, all it takes is practice at sailing, sailing, sailing.



Photo courtesy Johnson Motors

A three horsepower motor is the answer for sailboat fans who want economical and lightweight power to maneuver in harbors and dock areas.

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